

## Case Study: Integrating Tenant Comfort and Energy Savings at the ITC Hotel Grand Maratha Sheraton

### Building Summary

The ITC Hotel Grand Maratha Sheraton and Towers (ITC Sheraton) is one of Mumbai's leading hotel properties. The 386-room five-star hotel in the Sahar district opened in early 2001.



### Actions Taken

The building's managers employ an innovative approach to building management that continuously assures guest comfort and actively monitors energy performance. Building staff regularly record electricity and gas use at specified times during the day, and this data is shared across staff shifts throughout the day. The data monitored by the staff also includes outdoor minimum and maximum temperatures, and key daily factors that may influence energy use, such as large scheduled hotel functions, on-site contractor jobs, and VIP arrivals. Each shift staff transfer takes place in front of an information board containing the tracking information, and the outgoing shift is responsible for explaining the current energy use pattern to the incoming shift, and alerting them to areas that may require attention.

Through this process building management identified small, strategic investments that improved the energy performance of the building without compromising comfort or building functionality:

- ◆ **Optimized Lighting Operation:** Building managers observed that the atrium lobby and restaurant areas received high levels of natural lighting, making it unnecessary to supply artificial light during daylight hours. To eliminate the unnecessary lighting, they invested in low-cost timers and photocell controls to switch off 145 36-watt T-5 lamps and 520 50-watt halogen lamps when daylight alone was adequate. As a result, operating hours for lighting in the lobby and restaurant areas of the hotel have been reduced by 8.5 hours per day. In addition to this optimization the management team installed 26-watt T-5 lamps with electronic ballasts to replace all 32-watt T-8 lamps. The resulting annual cost savings exceeded the cost of the retrofit.
- ◆ **Optimized Garage Ventilation:** The building management team also made full use of automated controls to reduce energy use in the parking garage. The garage had been ventilated by four 37-kW ventilation fans operating 24 hours per day. By installing carbon monoxide sensors the fans can be shut off when not needed. In addition, variable frequency drives also allow fan speed to be adjusted to more closely match ventilation needs, reducing fan operating costs. It is estimated that this has reduced energy use for the fans by nearly two-thirds, or more than 1,600 kWh per day.

- ◆ **Energy Performance Monitoring:** Through continuously monitoring energy use at the hotel, managers have identified and implemented several other measures that have reduced energy use while maintaining or improving guest comfort:
  - **Chilled Water Optimization (chilled water reset):** By monitoring daily outdoor temperatures, building operators can adjust the temperature of the chilled water leaving the building's chiller system. The temperature is increased on days when less cooling is required, reducing chiller energy use.
  - **Stabilization of Building Energy Use:** Continuous monitoring of energy use and anticipated demand allows the management team to keep energy use stable, and avoid unnecessary demand charges. When spikes in energy use are anticipated or observed in their early stages, the management team is able to reduce energy use in other areas to maintain stable levels of energy consumption.
  - **Early Warning System:** Through rigorous monitoring, changes in energy performance that may indicate technical problems are immediately identified and investigated, helping to avoid energy use increases, and technical problems that may reduce guest comfort.

## Results

Improved management of the atrium lighting resulted in a reduction of more than 8,000 kWh of electricity use per month, or 96,000 kWh per year. This resulted in cost savings of approximately Rs. 407,000 per year (US\$9,000). The required investment of US\$1,700 in lighting controls was recovered in less than three months.

Improved management of the garage fan ventilation system resulted in a reduction of 50,000 kWh per month, or 600,000 kWh per year. This is equal to cost savings of approximately Rs. 1,540,000 per year (US\$57,000).

Improved internal energy use tracking helps the hotel avoid unnecessary spikes in energy use, and also helps the hotel to avoid exceeding its negotiated demand level with the local utility, which would result in the hotel incurring financial penalties. Closer attention to the operation of key building systems also results in better system performance and guest comfort.

## Contact Information

For more information on the eeBuildings program, to find out about upcoming trainings and events, or for general information on how to reduce building energy consumption using simple, low-cost operational measures, go to [www.epa.gov/eeBuildings](http://www.epa.gov/eeBuildings) or write to [eeBuildings@epa.gov](mailto:eeBuildings@epa.gov).

The U.S. Environmental Protection Agency's eeBuildings (energy-efficient Buildings) [www.epa.gov/eeBuildings](http://www.epa.gov/eeBuildings) program helps building owners, managers, and tenants improve the energy performance of their buildings. Drawing on the expertise of ENERGY STAR, eeBuildings connects financial and environmental performance to energy efficiency.



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